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Case Study

OCCUPATIONAL CONTACT DERMATITIS FROM *BHALLATAKA SHODHANA* - A CASE BASED INSIGHT INTO URUSHIOL TOXICITY

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ABSTRACT

The nut known as "marking nut" and colloquially referred to as *"Bhallataka"* or *"Bhilawa,"* *Semecarpus Anacardium* Linn (Family: Anacardiaceae), has been utilized in traditional medicine systems for a variety of illnesses since ancient times. According to the Drug and Cosmetic Act of 1940, it is classified as a Schedule E 1 medicine (poisonous medicinal plant). Despite used for numerous health conditions in Indian medicine and traditional medicine as a single formulation and compound formulation. The sticky, tar-like oil found in *Bhallataka* has been linked to contact dermatitis, primarily due to the presence of urushiol- a compound known to cause blistering on areas of skin that come into contact with it. This irritant oil, located mainly in the pericarp of the fruit, contains a mixture of 3-n-pentadec(en)yl catechols, which include anacardic acid and the bioactive constituents bhilawanol A and B. Bhilawanol itself is a blend of cis and trans isomers of ursuhenol and is chiefly concentrated within the fruit. This paper presents a case report of allergic contact dermatitis resulting from exposure to vapors released during the *Swedana* process of *Bhallataka* fruit in a *Dola Yantra*. The condition was aggravated by negligent handling during fruit slicing, insufficient safety measures, and improper cleaning of utensils used throughout the *Shodhana* procedure. The *Shodhana, Shamana* and *Raktamokshana* by *Siravyadha* methods given was successful in reducing the symptoms. This case study demonstrates the efficacy of Ayurvedic treatment *(Shodhana, Shamana* and *Siravedhana)* in contact dermatitis.

INTRODUCTION

According to Ayurvedic literature, *Bhallataka* is categorized as an *Upavisha*, or semi-poisonous substance[1] and it is also listed as a toxic medicinal plant under the Drugs and Cosmetics Act of India, 1940.[2] Its synonym, *Sopha Hetu*, highlights its characteristic property of causing blistering[3] implying that this medicine should be treated with extreme caution during collection, processing, and so on. This plant's fruit produces tarry oil in the pericarp that causes blisters when touched.[4] It is recommended that *Shodhana* (purificatory methods) of the fruits is to be carried out before to internal administration.[5]

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Because of its medicinal value in treating a wide range of illnesses, *Bhallataka's* relevance and usefulness are growing daily. Despite the numerous medical benefits of *Bhallataka* fruits, pharmacists are hesitant to use this drug due to its vesicating and irritating features.[6] Tarry oil of *Bhallataka* is primarily composed of phenolic compounds such as anacardic acid and bhilawanol, the latter encompassing both cis and trans isomers of urushiol (3-pentadecenyl-8′catechol). the fruit of *Bhallataka* is composed of approximately 10% cardol and 90% anacardic acid. Other notable constituents include bhilawanol,[7] semecarpol,[8] and anacardol.[9] Contact dermatitis is the main adverse effect brought on by Semecarpus anacardium.[10] Contact dermatitis refers to skin inflammation resulting from exposure to irritants or allergens. Irritant contact dermatitis (ICD) is a localized inflammatory reaction brought on by physical or chemical contact that damages the skin cytotoxically, disrupting the skin barrier and causing

cellular alterations and the production of pro-inflammatory mediators. Conversely, T-cells mediate a delayed form of hypersensitivity reaction known as allergic contact dermatitis.[11] Direct exposure to the marking nut tree may trigger an allergic response, medically identified as contact dermatitis caused by urushiol.[12] The allergic rashes caused by allergic contact dermatitis are known as type IV hypersensitivity reactions, or delayed-type hypersensitivity. Itching, inflammation, leaking, blisters, vesicles, and, in extreme situations, a burning feeling are the main symptoms.[13]

OBJECTIVE

To assess the efficacy of Ayurvedic treatment for allergic contact dermatitis caused by *Bhallataka* (Urushiol poisoning).

History of the patient

A female of 26 years presented with complaints of severe itching, burning sensation and thickened surface with erythematous rash and mild oedema on dorsal and ventral surfaces of the forearm, lateral surface of the thigh, right foot. The right surface of the face cheek and right ear, presented with severe itching and erythematous rash and mild oedema under the right eye.

Past history

Shodhana of *Bhallataka* was performed at the Department of Rasashastra and Bhaishajya Kalpana, KLE Shri BMK Ayurveda Mahavidyalaya, Belgaum, Karnataka. A postgraduate research scholar who came into contact with the fruits at work during storage, processing *(Shodhana),* cleaning the instruments, operating the equipment, Improper disposal of the tender coconut water used in the *Bhallataka Shodhana* process led to the development of allergic contact dermatitis. The affected individual received treatment at the outpatient department of KLE Shri BMK Ayurveda Mahavidyalaya, Belgaum, Karnataka. The patient was apparently asymptomatic for a week. The symptoms started to appear after one week of exposure to *Bhallataka*. Later the patient developed severe itching, erythematous rash and burning sensation.

The patient did not have any previous history of allergic reactions.

No history of DM and any other systemic disorders.

Family history

Nothing significant; all other family members are reportedly in good health.

History of previous treatment

There was no history of any medication prior to attend the OPD.

Clinical findings

General examination

Temperature –98°F

Pulse rate – 77/min

Blood pressure –120/70mmHg

Systemic Examination

The systemic examination showed no abnormalities in respiratory, cardiovascular and central nervous systems. But the symptoms (severe itching at night) caused disturbed sleep and made the patient anxious.

Ashthavidha Pariksha

Nadi – Pittakaphaja

Mala – Normal

Mutra –Mutra daha (burning micturition)

Jivha –Prakrut

Shabda –Spashta

Sparsha – Ushna

Drik – Prakrut

Akruti - Madhyam

Personal history

Post graduate scholar

Religion –Hindu

Diet – Non-vegetarian

Appetite - Normal

Bowel - One time per day

Maturation - 4 to 5 times per day

Sleep - Disturbed

No H/o allergies to any medications/specific food

Dashavidha pariksha

Her *Prakriti* (physical constitution) was *Pittaja, Mamsa Sara* (having good quality skin), *Madhyama samhanana* (medium body built), *Sama Pramana* (proportionate body structures) and *Madhyama Satva* (medium psyche) with *Sama Agni, Avara Vyayama Shakti* (weak physical capacity) and *Yavana Vaya*. She presented *Vikriti* in *Rasa, Rakta*.

Diagnosis

The diagnostic criteria were based on the clinical history given by the patient along with the local examination which revealed the signs and symptoms of allergic contact dermatitis due to urushiol.

Therapeutic intervention

Along with internal and external medication, the patient was advised to take tender coconut water, albumin part of coconut and proper *Pathya* with ghee and milk daily. The symptoms decreased in 24 days, the erythematous rash areas on the face faded, and the typical glow on the face was maintained, same was observed in other affected parts. Initially the patient wasn't responding to any internal and external medicines during the 1st two week, on the 14th day

Raktamokshana by *Siravyadhana* was done, later significant results was observed. External and internal medication were continued. The severity of symptoms gradually reduced. Application of coconut oil and *Bilwadi gutika lepa* was advised externally along with *Pariseka* with *Panchatikta* and *Vibhitaki Kashaya*. The patient was given the following intervention.

Table 1: Internal Medications

S.no	Medicine	Dose	Time of administration with *Anupana*
1.	*Patolakaturohinyadi kashaya*	15 ml twice daily	Morning and evening before food with *Ushna jala.*
2.	*Vibhitaki kashaya*	15 ml twice daily	Morning and evening before food with *Ushna jala.*
3.	*Bilvadi agada gutika*	250mg; 2 tab	Morning and evening before food with *Jala.*
4.	*Avipattikara churna*	4 gm daily	At bed time with milk
5.	*Punarnavasava*	30 ml twice daily	Morning and evening after food with *Ushna jala.*

Table 2: External medications

S.no	Medicine	Procedure
1.	*Panchatikata Kashaya* and *Vibhitaki kashaya*	*Dhara* with both *Kashaya* for 30 min.
2.	*Bilvadi agada gutika*	Mixed with *Nimba patra swarasa* applied locally.
3.	*Narikela taila*	Once or twice daily on areas with erythematous rash.

The above treatment protocol was given for a period of 24 days with a follow up scheduled after every week until the symptoms were resolved. The patient was also advised to avoid intake of non-vegetarian foods, foods with hot potency like chillis, tamarind etc. to avoid excess aggravation of *Pitta dosha*. Intake of ghee and milk was advised in the diet as it helps to balance *Pitta dosha*.

OBSERVATIONS AND RESULTS

The patient had complied with the guidelines of both the *Pathya ahara* and *Vihara* along with *Aushadi prayoga* and had shown marked relief in symptoms in a span of 24 days. Itching, oedema, erythematous rash was reduced.

Discussion and mode of action of drugs

The pericarp of its fruit contains urushiol - mixture of pentadec(en)yl catechols (bhilawanol A & B), anacardic acid, and cardol- known to induce Type IV hypersensitivity reactions on dermal exposure.[14,15] These delayed-type hypersensitivity reactions involve T-cell activation leading to erythema, vesicle formation, and intense pruritus.[16] While *Bhallataka* is therapeutically potent in conditions like *Kustha, Arsha*, and *Amavata*, its processing (*Shodhana*) must be handled with strict precautions due to its irritant nature.[17] In this case, unintended skin exposure to vapours from raw *Bhallataka* during the *Dola Yantra Swedana* process led to the onset of contact dermatitis. The symptoms, consistent with urushiol-induced dermatitis, included burning, itching, and erythematous rash with oedema.[18] Conventional treatment was not initiated; instead, Ayurvedic modalities were employed, showing significant improvement over 24 days. From ayurvedic viewpoint, the clinical features suggested *Pittaja-Vyadhi* with *Rakta-Dushti*, particularly due to the *Gunas* of *Bhallataka* being *Ushna* (hot) and *Tikshna* (sharp) that can aggravate *Pitta* and vitiate *Rakta dhatu.*[19] Symptoms like *Kandu* (itching), *Daha* (burning), *Raga* (redness), and *Sopha* (swelling) align with these Doshic disturbances. Hence, a threefold therapeutic strategy *Shodhana* (purification), *Shamana* (palliative therapy), and *Raktamokshana* (bloodletting) was adopted to achieve *Samprapti vighatana* (breakage of disease pathology) along with proper *Pathya*.

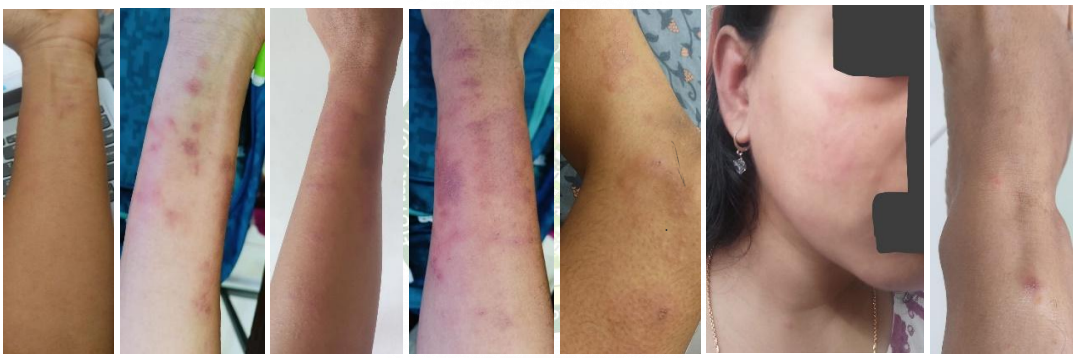
The internal medications used were primarily aimed at pacifying *Pitta* and purifying *Rakta dhatu*. *Patola katurohinyadi Kashaya*: Indicated in *Pittaja kustha*, contains *Tikta rasa* herbs like *Patola* and *Katuki*, that does *Pitta-rakta shodhaka* (blood and *Pitta* purifiers).[20] *Bhallataka visha* is thought to be countered by *Vibhitaki. Vibhitaki Kashaya* Known for its *Shothahara* (anti-inflammatory) it supports tissue healing and pacifies aggravated *Doshas*.[21] *Avipattikara Churna* acts as a *Pittarechaka*, aiding in the elimination of aggravated *Pitta* through the GI tract, while preventing further *Dhatu dushti*, pacify *Pitta* and *Rakta dushti* and reduce overall body heat.[22] *Punarnavasava* possess *Shothahara guna* and hepatoprotective properties that support systemic detoxification and reduce oedema.[23] Topical therapies are focused on reducing inflammation and itching, *Vibhitaki Kashaya Dhara* for 30 min was performed every day reduce inflammation, and local swelling due to its astringent and anti-inflammatory properties.[24] yet being an antidote for *Bhallataka visha. Bilvadi Agada Lepa* is used in *Vishavikara* (toxic conditions) and *Twak vikara* (skin disorders) the *Bilvadi agada* tablet is crushed mixed with *Nimba swarasa* and applied locally. Its anti-pruritic *(Kandughna)* qualities aid in *Kandu* relief.[25] Applying *Narikela taila* locally is advised. By mending

the damaged epidermal barrier and avoiding secondary infections, *Narikela taila* offers calming *Snigdha* (unctuous) and *Sheeta* (cold) properties. The patient's symptoms started to reduce after *Siravyadha* (venesection) it was done because the patient wasn't responding to any medications and to remove the *Dushitha raktha.* The *Raktamokshana* is the main treatment for *Raktaja vyadhi*, according to Sushruta, and it provides quick relief by eliminating inflammatory mediators and vitiated blood.[26] This aligns with the modern understanding of therapeutic phlebotomy and local cytokine modulation. Mechanistically, venesection likely helped reduce the systemic burden of inflammatory mediators such as interleukins and TNF-α, thus accelerating resolution of oedema. This procedure embodies the Ayurvedic principle of *Dosha nirharana* (removal of morbid *Dosha*) through minimal invasion. Prior to *Siravyadhana sthanika abhyanga* and *Swedhana* was done, later *Siravyadha* was done using a surgical needle no. 18 and the oozing blood was collected, the *Siravyadha* procedure was performed only once on the 14th day.

CONCLUSION

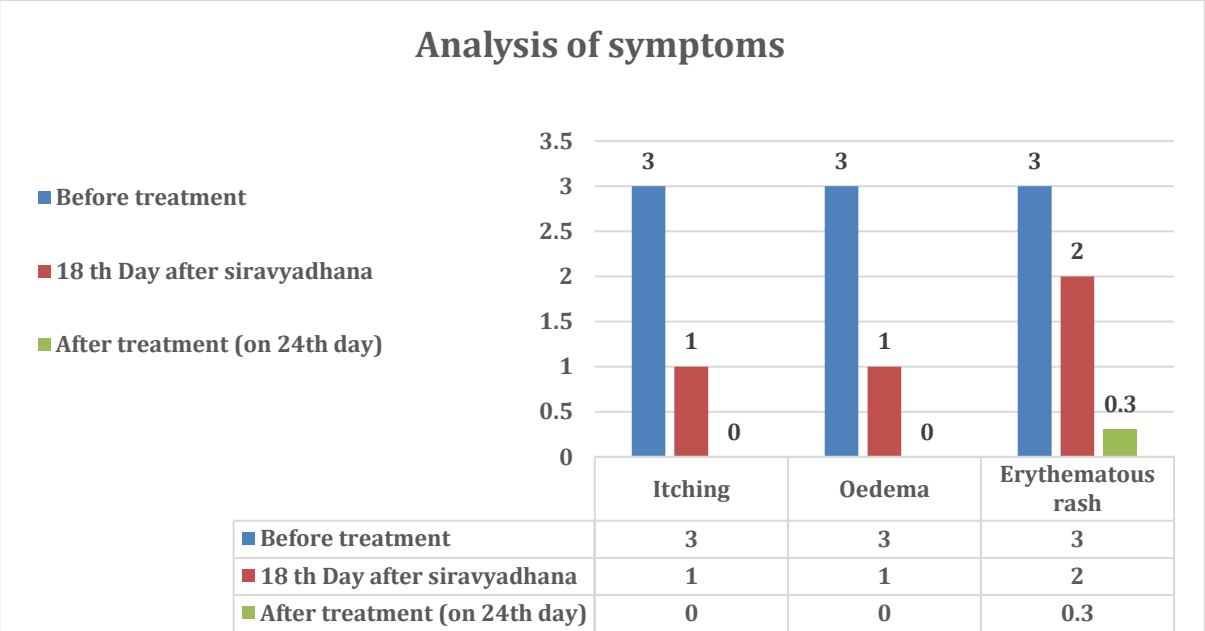
This case highlights the risk of urushiol-induced allergic contact dermatitis from improper handling of *Bhallataka* during *Shodhana* procedures. The Ayurvedic approach integrating *Shodhana*, *Shamana*, and *Raktamokshana* proved effective in managing symptoms, with notable relief observed post-*Siravyadhana (Raktamokshana).* The therapeutic combination of *Shodhana, Lepa, Dhara* and *Siravyadhana (Raktamokshana)* demonstrates the efficacy of traditional interventions in managing allergic contact dermatitis. *Siravyadhana* is considered as supreme as it drains out the vitiated *Rakta* and cures the disease. *Nidana parivarjana* may stop further progression of the disease This reinforces the importance of proper handling protocols and the relevance of classical Ayurvedic treatments in contemporary clinical practice.

Before treatment



During *Raktamokshana (Siravedhana)*

After Treatment



REFERENCES

1. Sadananda Sharma. Rasa Tarangini. 11th ed 2004; Kasinath sastri., editor. New Delhi: Motilal Banarasidas; pp. 648–9.
2. Malik V. Drugs and Cosmetics act 1940 with Drugs and Cosmetics rules. 18th ed. Lucknow: Eastern Book Company; 2005. p. 282.
3. Llanchezhian R, Joseph C R, Rabinarayan A. Urushiol-induced contact dermatitis caused during Shodhana (purificatory measures) of Bhallataka (Semecarpus anacardium Linn.) fruit. Ayu. 2012 Apr; 33(2): 270-3. doi: 10.4103/0974-8520.105250 PMID: 23559802; PMCID: PMC361165
4. llanchezhian R, Joseph CR, Rabinarayan A. Urushiol-induced contact dermatitis caused during Shodhana (purificatory measures) of Bhallataka (Semecarpus anacardium Linn.) fruit AYU. 2012; 33: 270–3
5. Sadananda Sharma. Rasa Tarangini. 11th ed 2004; Kasinath Shastri. New Delhi: Motilal Banarasidas; pp. 478–479.
6. Ramasastri, B.V. and shenolikar, I.S. 1974. Nutritive value of two unusual foods Adda (Bauhinia vahilii) and Marking nut (Semicarpus anacardium) kernals. Indian journal of medicinal research. 62 (11): 1673-1677
7. Naidu, D.S. 1925 Constituents of the marking-nut: Semecarpus anacardium Linn. Journal of Indian Institute of Science 8: 129-142.
8. Khare CP, editor. Indian Medicinal Plants-An illustrated Dictionary. listed. New Delhi: Springer (India) Private Limited; 2007. p.597.
9. Nagabhushanaa, KS, Umamaheshwari S, Tocolic FE, Prabhu SK, Green IR, Ramadoss CS. Inhibition of soybean and potato Lipoxygenases by Bhilawanols from Bhilawan (Semecarpus anacardium) nut shell liquid and some synthetic Salicylic acid analogues. Journal Enzyme Inhib. Medical Chemistry 2002; 17(4): 255-259.
10. Poornima Mansoria, Sharma Anita, Gothecha vinod kumar. Semecarpus Anacardium 2013; 6: 70-3.
11. Cheryl LE. Irritant contact dermatitis: Mechanisms to Repair 2014; 5: 1-8.
12. Llanchezhian R, Joseph C R, Rabinarayan A. Urushiol-induced contact dermatitis caused during Shodhana (purificatory measures) of Bhallataka (Semecarpus anacardium Linn.) fruit. Ayu. 2012 Apr; 33(2): 270-3. doi: 10.4103/0974-8520.105250. PMID: 23559802; PMCID: PMC3611655
13. Available from: http://en.wikipedia.org/wiki/Urushiol-induced_contact_dermatitis
14. Naidu MV, Sreenivasa Rao P, Ramamurti V. Chemical examination of the vesicant principles of Semecarpus anacardium Linn. Indian J Med Res. 1925; 13: 415–426.
15. Guin JD. Urushiol-induced contact dermatitis (Rhus dermatitis). Int J Dermatol. 1997; 36(6): 433–437.
16. Gaspari AA, Katz SI. Contact hypersensitivity and allergic contact dermatitis: immune mechanisms and their regulation. Clin Rev Allergy Immunol. 1999; 17(2): 199–213.
17. Sharma PV. Dravyaguna Vijnana, Vol. II. Varanasi: Chaukhamba Bharati Academy; 2003. p. 256–260.
18. Benezra C, Ducombs G, Sell Y, Foussereau J. Plant Contact Dermatitis. New York: Hemisphere Publishing; 1985. p. 91–120.

19. Sushruta. Sushruta Samhita, Sutra Sthana, Chapter 37, Verses 10–12. In: Shastri Ambikadutta, editor. Varanasi: Chaukhambha Sanskrit Sansthan; 2014.
20. CCRAS. Formulary of Ayurvedic Medicine, Vol. I. New Delhi: Central Council for Research in Ayurvedic Sciences; 2010.
21. Vaidya YT. Bhavaprakasha Nighantu. Commentary by Pandit Gyanendra Pandey. Varanasi: Chaukhambha Bharati Academy; 2009.
22. Anonymous. Ayurvedic Pharmacopoeia of India, Part I, Vol. II. New Delhi: Government of India, Ministry of AYUSH; 1999.
23. CCRAS. Pharmacological Investigations of Certain Medicinal Plants and Compound Formulations. New Delhi: Central Council for Research in Ayurvedic Sciences; 2009.
24. Tripathi B. Sharangadhara Samhita. Madhyama Khanda. Varanasi: Chaukhambha Surbharati; 2003.
25. Vaidya YT. Bhavaprakasha Samhita. Purva Khanda. Varanasi: Chaukhambha Sanskrit Bhawan; 2012.
26. Sushruta. Sushruta Samhita, Sutra Sthana, Chapter 14, Verses 33–36. In: Shastri Ambikadutta, editor. Varanasi: Chaukhambha Sanskrit Sansthan; 2014.

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